Supplementary Material

**One-pot synthesis of *in situ* carbon decorated Cu3P particles with enhanced electrocatalytic hydrogen evolution performance**

Mingyu Pi

College of Physics, Chongqing University, Chongqing, 401331, China;

Tao Yang

College of Chemical Engineering, Chongqing University, Chongqing, 401331, China;

Shuxia Wang and Shijian Chen\*

College of Physics, Chongqing University, Chongqing, 401331, China.

\*Corresponding author: Dr. Shijian Chen, E-mail: sjchen@cqu.edu.cn, Tel: +86-2365678362.

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Fig. S1. (a) Nitrogen adsorption/desorption isotherm and (b) the pore-size distribution curve of the Cu3P@C hybrid.

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Fig. S2. (a) SEM and (b) TEM images for the pure Cu3P nanoparticles.

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Fig. S3. Mechanism picture for electrocatalytic H2 evolution over carbon decorated Cu3P particles.

Table 1. Comparison of HER performance for the Cu3P@C with other reported Cu3P catalysts (NWs: nanowires, NSs: nanosheets, NPs: nanoparticles and NCs: nanocubes).

|  |  |  |  |
| --- | --- | --- | --- |
| Catalyst | Current  Density  (mA cm-2) | Corresponding overpotential  (mV) | Reference |
| Cu3P@C | 10 | 203 | *This work* |
| Cu3P | 263 |
| Cu3P NWs/CF | 10 | 143 | *Angew. Chem. Int. Ed., 2014, 53, 9577-9581* |
| Cu3P  NSs/NF | 10 | 105 | *ACS Appl. Mater. Interfaces, 2017, 9, 2240-2248* |
| Cu3P NCs | 10 | ~300 | *RSC Adv., 2016, 6, 9672-9677* |
| Cu3P NPs | 10 | ~350 | *Electrochim. Acta,2016, 199, 99-107* |